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Wideband study of black hole X-ray binaries observing by XTE: time delay between Compton and optical and Infrared flare

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We investigate the all publicly available observations of black hole binaries in the RXTE archive. We also search the optical and infrared data during the corresponding epochs. It is widely observed that during the rising and decaying state, there is a high probability that the Compton luminosity manifests as a flare through the process of model fitting and subsequent calculations of luminosity. We analyze the time lags between OIR(optical and infrared) and Compton luminosity by using CCF. We find in the rising state the OIR flare are always antecedent to Compton luminosity range from 2 days to 13 days. On the contrary in the decaying state the OIR flare always lag to Compton luminosity range from 6 days to 36 days, but it also has exception, the decaying state of GX 339-4 during MJD 54050-54450, the OIR flare is antecedent to Compton luminosity.

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